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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/464,364	12/15/1999	GEORGE SANCHEZ	09623-022900	7441

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EXAMINER	
HERNANDEZ, NELSON D	
ART UNIT	**PAPER NUMBER**
2612	6

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/464,364	SANCHEZ ET AL.	
	Examiner	Art Unit	
	Nelson D. Hernandez	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 1999*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *15* is/are allowed.

6)☒ Claim(s) *1-11,16-30 and 34* is/are rejected.

7)☒ Claim(s) *12-14, 31-33, 35 and 36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 December 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4 and 5*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 15 is objected to because of the following informalities: in line 33 the word " very" should be written as "every". Appropriate correction is required.

Double Patenting

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claim 1 is provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 13 of copending Application No. 09/861,279. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims **1-11**, **16-30** and **34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohashi, US Patent 6,642,960 B1 in view of Peairs, US Patent 5,694,228.

Regarding claim **1**, Kohashi discloses a method of detecting and correcting defective pixels in raw data taken from an image sensor (Fig. 2: 4) (Col. 11, line 66 – col. 12, line 13) used to obtain a digitized image, wherein said raw data includes normal pixels and defective pixels, said method comprising the steps of:

(a) receiving a raw data signal for each pixel in said image (Col. 12, lines 14-39);

(b) computing for each pixel received from said image sensor a brightness value (Col. 13, lines 4-39; col. 14, lines 12-38, col. 18, line 47 – col. 19, line 4);

(c) computing for each pixel received from said image sensor a local brightness value (Col. 14, lines 12-38);

(d) computing for each pixel received from said image sensor a local brightness deviation of said brightness value from said local brightness value (Col. 14, lines 12-38);

(e) setting a deviation threshold (Col. 14, lines 12-38);

(f) comparing for each pixel received from said image sensor, its local brightness deviation to said deviation threshold and designating pixels having local brightness deviations greater than said deviation threshold as defective pixels (Col. 14, lines 12-38).

Kohashi also discloses correcting the brightness value of said defective pixels (Col. 12, lines 14-39).

Kohashi does not explicitly disclose recording the location of said defective pixels in a statistical database, recording the frequency of occurrence of said defective pixels in said statistical database, and that the step of correcting the correcting step is warranted by trends from said statistical database.

However, Peairs teaches a method of detecting and correcting defective pixels wherein the location of the defective pixels are recorded in a statistical database and recording the frequency of occurrence of said defective pixel in said statistical database (See col. 4, line 21 – col. 5, line 14). Peairs also teaches correcting the brightness value of said defective pixels, provided said correcting is warranted by trends from said statistical database (Col. 3, line 52 – col. 4, line 2).

Therefore, taking the combined teaching of Kohashi in view of Peairs as a whole, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kohashi by recording the location of the defective pixels in a statistical database and recording the frequency of occurrence of said defective pixel in said statistical database and correcting the brightness value of said defective pixels, provided said correcting is warranted by trends from said statistical database. The motivation to do so would help to correct the defective pixels based on the location of the defective pixels as suggested by Peairs (Col. 7, lines 25-47) helping to correct the defective pixels faster and more accurately.

Regarding claim **2**, Kohashi discloses that the local brightness value is the arithmetic average of the brightness values of all pixels immediately neighboring and surrounding said pixel (Col. 12, lines 14-39).

Regarding claim **3**, Kohashi discloses that the local brightness deviation is the absolute value of the difference between said pixel's brightness value and said pixel's local brightness value (Col. 13, lines 4-27; col. 14, lines, 13-38).

Regarding claim **4**, Kohashi discloses that correcting is achieved by replacing said defective pixel's brightness value by said defective pixel's local brightness value (Col. 12, lines 14-39).

Regarding claim **5**, Kohashi discloses performing the detecting and correcting of said defective pixels dynamically and without any operator intervention (Figs. 4-6; se also col. 12, lines 14-39; col. 13, lines 4-61; col. 14, lines 13-38).

Regarding claim **6**, the combination of Kohashi and Peairs does not teach that the image sensor is part of a digital video camera but teaches that the disclosed method is for an image pickup apparatus (Col. 11, line 66 – col. 12, line 13). Since a digital video camera is considered also as an image pickup apparatus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the same method to a digital video camera as claimed with the motivation of correcting defective pixels in images captured by a digital video camera.

Regarding claim **7**, grounds for rejecting claim 6 apply here.

Regarding claim **8**, Kohashi discloses that the image sensor is one of (a) a charge-coupled device (CCD) image sensor array and (b) a complimentary metal oxide semiconductor (CMOS) image sensor array (Col. 11, line 66 – col. 12, line 13).

Regarding claim **9**, Kohashi discloses that the raw data is the unprocessed brightness value data, which is output by said image sensor, which has not gone

through either lossy compression or color processing (Col. 10, lines 23-33; col. 12, lines 14-39; col. 24, lines 48-59).

Regarding claim **10**, Kohashi does not explicitly disclose that the method of performing said detecting and correcting on a portion of said raw data obtained from said image sensor array corresponding to a portion of a frame of a video image but teaches that the disclosed method is for an image pickup apparatus (Col. 11, line 66 – col. 12, line 13). Since a digital video camera is considered also as an image pickup apparatus, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the same method to raw data obtained from a image sensor array corresponding to a portion of a frame of a video image taken with a digital video camera as claimed with the motivation of correcting defective pixels in images captured by a digital video camera.

Regarding claim **11**, grounds for rejecting claim 10 apply here.

Regarding claim **16**, the claim recites an apparatus performing the same method as in claim 1. The combination of Kohashi in view of Peairs as discussed in claim 1 teaches that the method for detecting and correcting defective pixels in raw data taken from an image sensor (See Kohashi, col. 11, line 66 – col. 12, line 13) used to obtain a digitized image can be implemented using an intelligent host (i.e. dedicate hardware, a programmed digital computer or both) (See Peairs, col. 10, lines 16-24), wherein said raw data includes normal pixels and defective pixels, said system comprising an image sensor (Kohashi, Fig. 2: 4) to record an image of a scene, said image sensor containing a grid of photosites to convert light shinning on said photosites to electrical charges,

wherein said electrical charges are converted to a series of analog charges which are then converted to digital signals by an analog to digital converter (Kohashi, fig. 2: 6; col. 11, line 66 – col. 12, line 13) when said image is read off said sensor. Grounds for rejecting claim 1 apply here.

Regarding claim **17**, the combination of Kohashi in view of Peairs does not teach that the image sensor transmits the digital signals to the intelligent host via a bus, wherein said bus connects said image sensor to said intelligent bus.

However, Official Notice is taken that using buses (i.e. Universal Serial Bus "USB") for transmitting data from a image sensor to an intelligent host (i.e. dedicate hardware, a programmed digital computer or both) is notoriously well known in the art and would have been obvious to on of ordinary skill in the art to transmit the digital signals to the intelligent host via a bus. The motivation to do so would provide faster transmission between the image sensor and the intelligent host.

Regarding claim **18**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the intelligent host as a programmed computer (See Peairs col. 10, lines 16-24). Since a server is also considered a computer it would have been obvious to one of ordinary skill in the art to use a server to perform the method for detecting and correcting defective pixels in raw data taken from an image sensor with the motivation of have an alternate intelligent host to perform said method. Grounds for rejecting claim 16 apply here.

Regarding claim **19**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the same as in claim 16. Grounds for rejecting claim 16 apply here.

Regarding claim **20**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 2. Grounds for rejecting claim 2 apply here.

Regarding claim **21**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 3. Grounds for rejecting claim 3 apply here.

Regarding claim **22**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 4. Grounds for rejecting claim 4 apply here.

Regarding claim **23**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 8. Grounds for rejecting claim 8 apply here.

Regarding claim **24**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 9. Grounds for rejecting claim 9 apply here.

Regarding claim **25**, grounds for rejecting claim 17 apply here.

Regarding claim **26**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 5. Grounds for rejecting claim 5 apply here.

Regarding claim **27**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 6. Grounds for rejecting claim 6 apply here.

Regarding claim **28**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 7. Grounds for rejecting claim 7 apply here.

Regarding claim **29**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 10. Grounds for rejecting claim 10 apply here.

Regarding claim **30**, the combination of Kohashi and Peairs as discussed in claim 16 teaches the system for performing the same method step as in claim 11. Grounds for rejecting claim 11 apply here.

Regarding claim **34**, the combination of Kohashi and Peairs teaches the same as in claim 16. Grounds for rejecting claim 16 apply here.

Allowable Subject Matter

6. Claim **15** is allowed.

7. The following is a statement of reasons for the indication of allowable subject matter: prior art of records neither anticipates nor renders obvious the limitations of detecting defective pixels being carried out on video data at a rate of one of (a) between one of every 128 video frames and 1 of every 32 video frames, and (b) one of every n times X frames, where n is an integer and X in not equal to either 50 or 60, and where said correcting is carried out continuously on every video data frame.

Kohashi discloses a method of detecting and correcting defective pixels in raw data taken from an image sensor (Fig. 2: 4) (Col. 11, line 66 – col. 12, line 13) used to

obtain a digitized image, wherein said raw data includes normal pixels and defective pixels, said method comprising the steps of:

(a) receiving a raw data signal for each pixel in said image (Col. 12, lines 14-39);

(b) computing for each pixel received from said image sensor a brightness value (Col. 13, lines 4-39; col. 14, lines 12-38, col. 18, line 47 – col. 19, line 4);

(c) computing for each pixel received from said image sensor a local brightness value (Col. 14, lines 12-38);

(d) computing for each pixel received from said image sensor a local brightness deviation of said brightness value from said local brightness value (Col. 14, lines 12-38);

(e) setting a deviation threshold (Col. 14, lines 12-38);

(f) comparing for each pixel received from said image sensor, its local brightness deviation to said deviation threshold and designating pixels having local brightness deviations greater than said deviation threshold as defective pixels (Col. 14, lines 12-38).

Kohashi also discloses correcting the brightness value of said defective pixels (Col. 12, lines 14-39).

However, Kohashi fails to teach or suggest recording the location of said defective pixels in a statistical database, recording the frequency of occurrence of said defective pixels in said statistical database, and that the step of correcting the correcting step is warranted by trends from said statistical database, wherein said correcting is achieved by replacing said defective pixel's brightness value by said defective pixel's local brightness value, wherein said statistical database warrants pixel correction is a

particular defective pixel has an occurrence frequency of at least two out of four queries; and wherein said detecting is carried out on video data at a rate of one of (a) between one of every 128 video frames and 1 of every 32 video frames, and (b) one of every n times X frames, where n is an integer and X in not equal to either 50 or 60, and where said correcting is carried out continuously on every video data frame.

Claims **12-14**, **31-33**, **35** and **36** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (703) 305-8717. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson D. Hernandez
Examiner
Art Unit 2612

NDHH
October 14, 2004

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